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COMPARING AN EXPERIMENTAL AND A CONVENTIONAL METHOD OF TEACHING LINGUISTIC SKILLS.

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TO DETERMINE THE COMPARATIVE EFFECTIVENESS OF PROGRAMED AND CONVENTIONAL WORKBOOK METHODS OF TEACHING GRAMMAR, SENTENCE STRUCTURE, PUNCTUATION, AND CAPITALIZATION, PRE- AND POST-TEST SCORES IN FOUR REMEDIAL ENGLISH SECTIONS WERE COMPARED. TWO TEACHERS PARTICIPATED IN THE EXPERIMENT, WITH EACH CONDUCTING A WORKBOOK SECTION AND A PROGRAMED SECTION. NO GAINS OCCURRED IN SPELLING AND WORD USAGE (TWO AREAS NOT COVERED IN THE INSTRUCTION), NOR WERE THERE GAINS IN GRAMMATICAL USAGE (STRUCTURE WAS COVERED IN THE INSTRUCTION). BOTH INSTRUCTION METHODS INCREASED SCORES IN SENTENCE STRUCTURE, PUNCTUATION, AND CAPITALIZATION, ALTHOUGH DIFFERENCES AMONG THE TREATMENT GROUPS WERE NOT SIGNIFICANT. CONCLUDING THAT THE REMEDIAL ENGLISH COURSE COULD BE TAUGHT AS EFFECTIVELY BY THE PROGRAMED AS BY THE CONVENTIONAL METHOD, THE EXPERIMENTERS RECOMMENDED THAT PROGRAMED INSTRUCTION BE USED IN ALL SUCH CLASSES. THIS DOCUMENT IS VOLUME 2, NUMBER 3 OF "THE GENERAL COLLEGE STUDIES," 1965-66. (WO)

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# COMPARING AN EXPERIMENTAL AND A CONVENTIONAL METHOD OF TEACHING LINGUISTIC SKILLS

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The "unprepared" student is one of the perennial concerns of most junior colleges. Perhaps the most easily identified area in which students are deficient - and it is a deficiency universally deplored by all segments of higher education - is the vital one of language skills. How to cope with the student whose lack of linguistic proficiency handicaps him in all of his academic work, is a problem that many colleges and universities grapple with. Some institutions "solve" the problem by throwing up their hands and, in effect, abandoning any attempts at remedial instruction. Because of their commitment to the constituents they serve, however, junior colleges cannot ignore the needs of the student who lacks linguistic skills.

The General College has been concerned about the special needs of the academically disadvantaged student for thirty-five years. This concern has led the College to experiment with various forms of remedial instruction. In recent years, programmed learning concepts have shown promise as a basis for improved teaching in the language arts. Drawing on the backlog of research studied employing programmed learning techniques in the General College's Division of Literature, Speech, and Writing, this issue of The General College Studies presents an account of a practical, utilitarian study of one way to improve remedial instruction in grammar and usage.

An abbreviated version of this report, by Professor Stockdale, appeared in The General Education Sounding Board 3:1:31-33 (Winter, 1966).

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# COMPARING AN EXPERIMENTAL AND A CONVENTIONAL METHOD OF TEACHING LINGUISTIC SKILLS

## Purpose of the Study

The study was conducted to determine the comparative effectiveness of two methods of teaching grammar, sentence structure, punctuation and capitalization. The methods of instruction were (1) the programmed learning method and (2) the workbook method.

## Experimental Population

The students taking part in the study were 171 beginning freshmen in the General College of the University of Minnesota. All of them completed GC 30B, Fundamentals of Usage, during the Fall Quarter of 1961.

## Procedures in Conducting the Study

Four sections of GC 30B participated in the study. Two of the sections met from 8:30 to 9:20 a.m., and two met from 2:30 to 3:20 p.m. All sections met four days a week, Monday through Thursday, for a period of ten weeks. One of the morning sections and one of the afternoon sections used a conventional workbook in studying grammar, sentence structure, punctuation and capitalization; the other morning and afternoon sections used a programmed learning text in studying the same material. The workbook was A BASIC GUIDE TO CLEAR AND CORRECT WRITING by Margaret C. Walters, and the programmed learning text was ENGLISH 2600 by Joseph C. Blumenthal. Two teachers participated in the study. Each of them conducted two sections of the course--a workbook section and a programmed learning section. The

The teachers actively instructed those sections using workbooks; but in the experimental sections, since the programmed learning text did the "instructing," the teachers' roles were primarily clerical. Students in all sections of the course took standardized tests at the beginning and at the end of the quarter.

## Measuring Instruments

The standardized tests administered at the beginning and at the end of the quarter were Forms A and B of the ESSENTIALS OF ENGLISH TESTS, developed by Dora V. Smith and Constance M. McCullough. Form A was given at the beginning of Fall Quarter, 1961, and Form B at the close of the quarter. Five tests constitute each form of the ESSENTIALS OF ENGLISH TESTS:

| | | |
|---|---|---|
| Test 1, | "Spelling" | 25 items |
| Test 2, | "Grammatical Usage" | 44 items |
| Test 3, | "Word Usage" | 15 items |
| Test 4, | "Sentence Structure" | 20 items |
| Test 5, | "Punctuation and Capitalization" | 53 items |

It is important to observe that Tests 1 and 3 cover material which was not covered in GC 30B.

## Design of the Study

The experimental design is that of a 2-by-2 latin square. With $T_1$ and $T_2$ indicating teachers, $H_1$ and $H_2$ the hours and E and C the experimental and conventional sections, the design assumes the following form:

| | E | C |
|---|---|---|
| $H_1$ | $T_1$ | $T_2$ |
| $H_2$ | $T_2$ | $T_1$ |

In a latin square, the interaction of any two treatments is confounded (combined) with the third treatment.

Since there was no indication from past research that hour differences contribute to achievement differences, it was decided to attribute any variability due to hours to the interaction of treatment and teachers.

To control the effect of initial English ability, each of the four sections was divided into three ability groups. The criterion employed in making this division was each student's score on the Co-operative English Test taken by entering freshmen at the University of Minnesota.

## Experimental Results

A comparison of pre- and post-test scores on Forms A and B of the ESSENTIALS OF ENGLISH TESTS using students' tests for correlated measures for each of the twelve groups showed that both treatments had increased students' scores on two of the five tests. These were Test 4, "Sentence Structure," and Test 5, "Punctuation and Capitalization." That there was no increase in scores in Test 1, "Spelling," and Test 3, "Word Usage," was not surprising, since instruction had not been given in these areas. But it was surprising to discover no increase in scores on Test 2, "Grammatical Usage," since grammar had been taught in conventional and experimental sections alike. A possible explanation of this absence of gain in Test 3 lies in this: perhaps both the conventional and experimental treatments stressed grammatical structure, whereas the test emphasizes the appropriate usage of the structures--of the inflectional forms--occurring in English nouns, pronouns, verbs, adjectives and adverbs.

In order to measure the relative effectiveness of the programmed method in teaching (1) sentence structure, and (2) punctuation and capitalization, the twelve treatment combinations were set up in a 3-way factorial representation with teacher, treatment and ability the three classification variables. Since there were unequal numbers of students in the classes, the unweighted means method of analysis of variance was used to decide on significant effects due to classification variables.

Because they were the only scores exhibiting gains between pre- and post-test, the post-test scores on Test 4 and 5 were analyzed. The results of this analysis are set forth in Tables I and II. A perusal of the F ratios in these tables reveals that a significant difference is to be found only when the source of variation is student abilities as measured by the Co-operative English Test.

## Conclusion

The evidence drawn from this study strongly supports this conclusion: GC 30B, Essentials of Usage, can be taught just as effectively by the programmed learning method as it can by the conventional method of instruction.

## Recommendations

It is recommended that the programmed learning method of instruction be adopted for all sections of GC 30B. For the programmed learning method has factors in addition to its pedagogical effectiveness to recommend it: (1) It saves study time; students in the experimental sections mastered the same material in a shorter period of time than those in the conventional sections. (2) Instructors could be freed for other responsibilities; the grading of tests and

the numerous clerical duties in this course could be performed by teaching assistants.

In addition, it is recommended that interested members of the staff of the Literature, Speech and Writing Division of the General College prepare a program for this course. Since the programmed learning method of instruction is in its pioneering stage, experimentation in programming and in the analysis of programs as they are being tried in the classroom should be encouraged. Improved programs should result in more efficient learning on the part of students.

## Appendix 1

### Essentials of English Test 4, "Sentence Structure"

| | | Means pre-test | Means post-test | Number | t-value | t .95 | t .99 |
|---|---|---|---|---|---|---|---|
| **High** | | | | | | | |
| Conventional | | | | | | | |
| | K | 12.20 | 12.73 | 15 | 1.28 | 1.76 | 2.62 |
| | S | 11.19 | 13.56 | 16 | 3.41 | 1.75 | 2.60 |
| Programmed | | | | | | | |
| | K | 10.93 | 12.00 | 14 | 1.69 | 1.77 | 2.65 |
| | S | 9.93 | 12.00 | 14 | 2.73 | 1.77 | 2.65 |
| **Middle** | | | | | | | |
| Conventional | | | | | | | |
| | K | 9.87 | 11.67 | 15 | 2.06 | 1.76 | 2.62 |
| | S | 9.80 | 12.47 | 15 | 2.37 | 1.76 | 2.62 |
| Programmed | | | | | | | |
| | K | 9.86 | 12.14 | 14 | 3.55 | 1.77 | 2.65 |
| | S | 9.00 | 11.75 | 12 | 3.39 | 1.80 | 2.72 |
| **Low** | | | | | | | |
| Conventional | | | | | | | |
| | K | 10.08 | 10.50 | 12 | .57 | 1.80 | 2.72 |
| | S | 10.07 | 11.33 | 15 | 1.49 | 1.76 | 2.62 |
| Programmed | | | | | | | |
| | K | 11.07 | 10.57 | 14 | -.46 | 1.77 | 2.65 |
| | S | 8.60 | 10.53 | 15 | 2.33 | 1.76 | 2.62 |

## Appendix 2

### Essentials of English Test 5, "Punctuation and Capitalization"

| | Means pre-test | Means post-test | Number | t-value |
|---|---|---|---|---|
| **High** | | | | |
| Conventional | | | | |
| K | 33.60 | 37.27 | 15 | 3.97 |
| S | 37.63 | 40.13 | 16 | 3.18 |
| Programmed | | | | |
| K | 35.79 | 40.86 | 14 | 5.46 |
| S | 37.50 | 39.64 | 14 | 2.60 |
| **Middle** | | | | |
| Conventional | | | | |
| K | 32.53 | 37.33 | 15 | 5.95 |
| S | 30.07 | 35.67 | 15 | 4.38 |
| Programmed | | | | |
| K | 33.00 | 37.43 | 14 | 3.32 |
| S | 35.00 | 37.92 | 12 | 1.78 |
| **Low** | | | | |
| Conventional | | | | |
| K | 30.17 | 34.00 | 12 | 3.86 |
| S | 31.07 | 37.93 | 15 | 6.47 |
| Programmed | | | | |
| K | 28.50 | 34.64 | 14 | 3.96 |
| S | 30.20 | 36.13 | 15 | 4.71 |

## Appendix 3

### Essentials of English Test 4, "Sentence Structure" Analysis of Variance

| Source of Variation | D.F. | Sums of Squares | Mean Square | F ratio | F .96 | F .99 |
|---|---|---|---|---|---|---|
| Main Effects- | | | | | | |
| Treatments | 1 | .8910 | .8910 | 2.08 | 3.9 | 6.8 |
| Abilities | 2 | 7.1072 | 3.5536 | 8.30 | 3.1 | 4.7 |
| Teachers | 1 | .3434 | .3434 | .80 | | |
| Interactions- | | | | | | |
| Teacher by Abilities | 2 | .0269 | .0134 | .03 | | |
| Teacher by Treatment | 1 | .6961 | .6961 | 1.63 | | |
| Treatment by Ability | 2 | .5689 | .2844 | .66 | | |
| Teacher by Treatment by Ability | 2 | .0194 | .0097 | ..02 | | |
| Error | 159 | 68.0971 | .4283 | | | |

### Mean Scores

By treatment

| | |
|---|---|
| Conventional | 12.04 |
| Experimental | 11.50 |

By ability levels

| | |
|---|---|
| High | 12.57 |
| Middle | 12.01 |
| Low | 10.73 |

By teachers

| | |
|---|---|
| Teacher 1 | 11.60 |
| Teacher 2 | 11.94 |

## Appendix 4

### Essentials of English Test 5, "Punctuation and Capitalization" Analysis of Variance

| Source of Variation | D.F. | Sums of Squares | Mean Square | F ratio | F .95 | F .99 |
|---|---|---|---|---|---|---|
| Main Effects- | | | | | | |
| Treatments | 1 | 1.5337 | 1.5337 | 1.24 | 3.9 | 6.8 |
| Abilities | 2 | 29.5138 | 14.7569 | 11.90 | 3.1 | 4.7 |
| Teachers | 1 | 2.8910 | 2.8910 | 2.33 | | |
| Interactions- | | | | | | |
| Teacher by Abilities | 2 | 5.4677 | 2.7338 | 2.20 | | |
| Teacher by Treatment | 1 | 1.5914 | 1.5914 | 1.28 | | |
| Treatment by Ability | 2 | 2.5858 | 1.2929 | 1.04 | | |
| Teacher by Ability by Treatment | 2 | 5.2143 | 2.6071 | 2.10 | | |
| Error | 159 | 197.2450 | 1.2405 | | | |

### Mean Scores

By treatment

| | |
|---|---|
| Conventional | 37.06 |
| Experimental | 37.77 |

By ability levels

| | |
|---|---|
| High | 39.48 |
| Medium | 37.09 |
| Low | 35.68 |

By teachers

| | |
|---|---|
| Teacher 1 | 36.92 |
| Teacher 2 | 37.90 |

## Appendix 5

## Tests and Texts Used

Blumenthal, Joseph C. English 2600. New York: Harcourt, Brace, and World, Inc., 1960.

Smith, Dora V. and Constance M. McCullough. Essentials of English Tests. Minneapolis: Educational Test Publishers, Inc., c.1939.

Walters, Margaret C. Clear and Correct Writing. Chicago: Scott, Foresman and Company, 1959.